

Remarks/Arguments

In view of the comments below Applicant respectfully requests that the Examiner reconsider the present application, including claims 1-38 and new claims 77-83, and withdraw the objection to claims 5-37 (now claims 6-38) and rejections of claims 1-4, 6-9, 11, 21, 25, 28 and 33-37 as well as claims 16, 17 and 22-24. Claims 1, 4, 9, 11, 18, 20, 21, 26, 27 and 38 have been amended to resolve various technicalities and for further clarification. Various paragraphs of the specification and the Figures have been amended to correct clerical errors. No new matter has been added by any of these amendments. Note that in these discussions all claim numbering refers to the claims as renumbered unless otherwise noted. Applicant has chosen this approach as it is believed that the Examiner largely used renumbered claim designations in the June 20, 2003 office action.

- a) The Examiner has issued a restriction requirement between the invention defined in claims 1-38 and the invention defined by claims 39-76, suggesting that they are related as a sub combination and combination and thus distinct if the combination does not require the particulars of the sub combination and the sub combination has separate utility. The Examiner has noted that a separate search is required for the two sets of claims. Applicant has elected with traverse via a telephone conversation and hereby affirms that election with traverse to initially prosecute claims 1-38. In Applicant's view each of these claim sets require nearly identical searches as the limitations of each set of claims is found in some combination in the other set of claims and thus Applicant does not see that any significant extra search effort is required and therefore there is no need to restrict between these claim sets for the purpose of examination.

Application No. 10/003,725
Amendment dated September 30, 2003
Reply to Office Action of June 20, 2003

Claims 39-76 (as renumbered) are hereby withdrawn from further consideration as being drawn to a non-elected invention and of these claims 66-67, and 71-75 have been cancelled.

Please note that new claims 77-83 clearly define in varying scope an invention within the group I invention.

b) Claims 5-37 (as originally numbered) are objected to because of informalities. The Examiner requires renumbering of these claims. In the originally filed application the claims included a duplicate claim 5. Claims 5-37 have been amended to remedy the duplicate claim number 5 and are now denoted as claims 6-38. Applicant has also renumbered original claims 38-75 as claims 39-76. Thus Applicant respectfully submits that this objection has been successfully traversed and therefore respectfully requests that the Examiner reconsider and withdraw this objection to claims 6-38 as renumbered.

c) Claims 1-4, 6-9, 11, 21, 25, 28 and 33-37 stand rejected under 35 U.S.C. 102(e) as being anticipated by Melanson (U.S. Patent No. 6,373,334 B1).

The Examiner maintains with reference to claims 1-3, 6-9, 11, 21, 28 and 33-37 that Melanson discloses an amplifier circuit comprising a delta sigma modulator 102 that is connected to receive an input signal and produces a bi-level modulation signal at the output of 102, a switching mode power amplifier 106 driven by the bi-level modulation signal and having an output, and a linearizer 220, 214, 212 that is connected to supply a corrective signal RTF1, RTF2 at a location prior to the switching mode power amplifier. The examiner further maintains

with reference to claim 4 that the reference shows a tunable output filter 110 coupled to the output of the amplifier 106 that is functionally equivalent to the harmonic filter of claim 25.

The Melanson reference clearly discusses a high power audio amplifier system rather than a radio frequency amplifier system as claimed in claims 1-38 and new claims 77-83 (see for example, Melanson background section at column 1). Furthermore the reference shows various low pass filters 202 (col. 3, lines 4-5) and 110 and indicates that the drivers 106 drive a load such as a speaker (col. 3, lines 34-35). In stark contrast Applicant's disclosure deals with radio frequency power amplification systems as noted variously throughout the specification and claims at for example, paragraph 0002 – radio frequency power amplification, paragraph 0014 – input signal frequencies in excess of 300 KHz and 800 MHz, paragraph 0058 – operation in frequency bands such as VHF, UHF, SHF, EHF (L, S, X, Ku, Ka, etc.) with varying modulation formats suitable for CDMA, W-CDMA, TDMA, FM, QPSK, QAM and so on.

Applicant has amended claim 1 to further clarify the radio frequency amplifier. Amended claim 1 now affirmatively requires that the switching mode power amplifier provide a radio frequency signal at the output. Clearly Melanson does not show or suggest such a switching mode power amplifier that provides a radio frequency signal. Since Melanson does not show or suggest all of the limitations of claim 1, Applicant respectfully submits that Melanson does not properly support a §102(e) based rejection of claim 1. For this reason, Applicant respectfully requests that the Examiner reconsider and withdraw the rejection of claim 1 under 35 U.S.C. §102(e) based on Melanson. Furthermore claims 2-38 are each dependent at some level on claim 1 and thus by virtue of dependency on an apparently allowable claim should likewise be deemed allowable. Thus and for this reason Applicant respectfully requests that the Examiner reconsider

Application No. 10/003,725
Amendment dated September 30, 2003
Reply to Office Action of June 20, 2003

and withdraw the rejection of claims 2-4, 6-9, 11, 21, 25, 28 and 33-37 under 35 U.S.C. §102(e) based on Melanson.

Furthermore claims 2, 3, and 33-34 recite in varying scope a band pass delta sigma modulator. As noted above the delta sigma modulator discussed and described in Melanson is a low pass delta sigma modulator (filter 202 is low pass) and not a band pass delta sigma modulator. Therefore Applicant respectfully submits that Melanson does not anticipate under §102(e) claims 2, 3, or 33-34 or claims dependent thereon. For this additional reason Applicant respectfully requests that the Examiner reconsider and withdraw the rejection of claims 2-3 and 33-34 under 35 U.S.C. §102(e) based on Melanson.

Additionally, claim 4 and 34 recite in varying scope a tunable filter coupled to the output of the switching mode power amplifier where the tunable filter is tunable to a plurality of frequency bands or is a multi-band filter. The low pass filter 110 of Melanson does not show or suggest such a filter as claimed. Therefore Applicant respectfully submits that Melanson does not anticipate under §102(e) claims 4 or 34 or claims dependent thereon. For this additional reason Applicant respectfully requests that the Examiner reconsider and withdraw the rejection of claims 4 and 34 under 35 U.S.C. §102(e) based on Melanson.

Further, claim 8 specifically recites an extended interface between the delta sigma modulator and the switching mode power amplifier. The Melanson reference does not discuss, show or suggest any such interface between these elements. Rather Melanson shows via the relevant figures the delta sigma modulator connected via PWM 104 to drivers 106 and does not discuss any specifics of this interface or any other characteristics of the respective elements or interface that would lead one of ordinary skill to conclude this is an extended interface. Note that

Application No. 10/003,725
Amendment dated September 30, 2003
Reply to Office Action of June 20, 2003

claim 11 has been amended to resolve a clerical error and now depends from claim 10. Therefore Applicant respectfully submits that Melanson does not anticipate under §102(e) claim 8 or claims dependent thereon, specifically claims 9-20, each more narrowly defining the extended interface of claim 8. For this additional reason Applicant respectfully requests that the Examiner reconsider and withdraw the rejection of claims 8-9, and 11 under 35 U.S.C. §102(e) based on Melanson.

In addition, claims 28 and claims 29 – 31 dependent on claim 28 and other claims define in varying scope a switching mode power amplifier having an adjustable output power and specific arrangements for effecting such an adjustment. The Melanson reference does not show, discuss or otherwise suggest any such adjustable output power from the switching mode power amplifier, nor any power monitoring apparatus as recited by claim 19. Therefore Applicant respectfully submits that Melanson does not anticipate under §102(e) claim 28 or claims 30-31 dependent thereon, each more narrowly defining the power control of claim 28. For this additional reason, Applicant respectfully requests that the Examiner reconsider and withdraw the rejection of claim 28 under 35 U.S.C. §102(e) based on Melanson.

Furthermore claims 35, 36, and 37 each recite one or more relationships between the switching mode power amplifier and an antenna or a power supply. Melanson does not discuss, show, or suggest such characteristics or relationships between an antenna or power supply. Therefore Applicant respectfully submits that Melanson does not anticipate under §102(e) claim 35, 36, or 37, each defining one or more relationships with the antenna or power supply. For this additional reason, Applicant respectfully requests that the Examiner reconsider and withdraw the rejection of claims 35, 36, and 37 under 35 U.S.C. §102(e) based on Melanson.

d) Claims 16, 17 and 22-24 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Melanson. Claims 16 and 17 are dependent upon claims 8 and further upon claim 1. Claims 22-24 are dependent upon claim 1. As and for the reasons noted above it is believed that claims 1 and claim 8 are allowable over the references of record. Since these claims are dependent upon an allowable base claim they should likewise be allowable for the same reasons. Thus Applicant respectfully requests that the Examiner reconsider and withdraw the rejection of claims 16, 17 and 22-24 under 35 U.S.C. 103(a) based on the Melanson reference.

e) Claims 5, 10, 12-15, 18-20, 26, 27, 29-32 and 38 are objected to as being dependent upon a rejected base claim. Applicant notes with appreciation that claims 5, 10, 12-15, 18-20, 26, 27, 29-32 and 38 are believed to recite allowable subject matter. Applicant respectfully notes for the Examiner's convenience, that claims 26 and 27 have been amended to depend from renumbered claim 6 as was the original intention, given the subject matter of the relevant claims. In any event Applicant wishes to preserve the right to amend these claims in accordance with the Examiners suggestion to include the limitations of all intervening claims, should ongoing discussions prove unsatisfactory.

f) New claim 77 recites a limitation of a band pass delta sigma modulator. Specifically claim 77 defines:

A radio frequency amplifier system comprising:
a bandpass delta sigma modulator connected to receive an input signal and produce a bi-level modulation signal;

Application No. 10/003,725
Amendment dated September 30, 2003
Reply to Office Action of June 20, 2003

a switching mode power amplifier driven by the bi-level modulation signal and having an output; and

a linearizer connected to supply a corrective signal at a location prior to the switching mode power amplifier.

As noted above Melanson does not discuss, show or suggest a band pass delta sigma modulator and thus Applicant respectfully submits that this claims is allowable over this and all other references of record. Claims 78 – 83 are each dependent upon claim 77. For these reasons, Applicant believes that claims 77-83 are allowable over the references of record.

Accordingly, Applicant respectfully submits that the claims, as amended, clearly and patentably distinguish over the cited references of record and as such are to be deemed allowable. Such allowance is hereby earnestly and respectfully solicited at an early date. If the Examiner has any suggestions or comments or questions, calls are welcomed at the phone number below.

Although it is not anticipated that any fees are due or payable, the Commissioner is hereby authorized to charge any fees that may be required to Deposit Account No. **50-1147**.

Respectfully submitted,


Charles W. Bethards
Reg. No. 36,453

Attachments

Posz & Bethards, PLC
11250 Roger Bacon Drive
Suite 10
Reston, VA 20190
Phone (703) 707-9110
Fax (703) 707-9112
Customer No. 23400